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Vol. VI, No. 45.] BULLETIN OF THE TORREY BOTANICAL CLUB. [New York, Sept., 1878.

§ 254. Some Rambling Notes on Collecting and Preserving Herbarium Specimens.

IV. **Drying Specimens.**—In these notes we have endeavored to follow, in a measure, the mythical Mrs. Glasse's celebrated recipe for cooking a hare:—"First catch your hare." We have collected our specimens, or, in other words, attempted to show how they should be collected properly, and now the next thing is to prepare them for the herbarium, the chief requisite being to extract the moisture as rapidly as possible from the green plant.

There are two principal methods in use among botanists for drying plants,—the first, which is the one usually followed, is by *absorption*, where pressure is used and change of driers (drying paper) is necessary. The other mode, which is of more recent introduction, is by *evaporation*: the wire-netting press containing the specimens is hung in the open air; the drying being done through the agency of the sun and wind, no changing of driers being required until the plants are cured.

Which is the better of the two methods is open to considerable difference of opinion. The latter mode is very simple and demands much less labor than the other after the plants are once in press; while with the other to dry the specimens properly demands assiduous care and attention during the whole time they are pressing. The *wire-press* will probably answer a very good purpose for those who wish to collect in a small way as they travel, but as most botanists like to collect extensively, this press seems hardly adequate to the demands likely to be made upon it, particularly on such occasions as frequently occur to the writer, and perhaps to most botanists, when, returning home from a several days, collecting trip, he finds a thousand or more specimens in his box and portfolio *clamoring* for immediate attention.

In regard to the quality of work turned out by this press, my experience has not been entirely satisfactory. My specimens have generally shrivelled more or less, and the quality has usually been not above second-rate. I tried it faithfully for part of one season, along with my other presses, and then abandoned the evaporating process. Feeling my disappointment keenly, as my expectations had been considerably raised, I may possibly have discarded it too soon; for my ill-success may be owing to not having mastered fully certain details, the knowledge of which, however simple, is necessary to the working of every system. But I understand that the experience of a few others coincides with my own, and it is also fair to state that I have never seen specimens, even when dried by the warmest advocates of the wire-press, equal in quality to those preserved by the other method.

While the personal experience of the writer is decidedly in favor of the old-fashioned press, as his *evaporation* friends term it, let it be not inferred that he has any hobby to ride in this matter. He has no sincerer wish than to see his favorite science a popular study with his young contemporaries, and no more cherished purpose in these notes than to clear up and make even, a little, the road that leads to the portal of this charming department of natural science.

If specimens of as good quality, and in as large quantity, in the same time, can be dried this way as the other, then it certainly is a great improvement in preparing our herbarium specimens, and it would do much towards making collections popular among botanical students, as the labor in drying is undoubtedly less than half. Unfortunately such merits in workmanship cannot at present be fully conceded. However, this press ought to prove a great boon to those botanists desirous of making a collection of dried plants, and yet having very little time in which to do it, and particularly to that class alluded to in a former article, who put their specimens in one of the old kind of presses and then give themselves no further trouble. One of these wire-presses, if used, could not fail to improve their specimens greatly, although the necessity of bringing the press inside at the approach of night or a storm might, perhaps, be to them an unconquerable objection.

To Prof. A. Wood belongs the credit of first calling the attention of American botanists to this method of drying plants by evaporation. For some time, however, the wire-press has been in use in some parts of Europe. Whether Prof. Wood borrowed the idea from the European botanists, or whether to him belongs the merit of the original invention, the writer is not prepared to say. At all events, he published, over twenty years ago, in one of his text-books, a description of this method of drying plants by evaporation by means of a wire-press hung in the open air. In an article in the BULLETIN of March, 1872, he again refers to the subject, claiming for this method a great improvement over the old process. By request of an eminent European botanist, this article was republished in BULLETIN for April, 1877. As Prof. W. is a distinguished champion of this method, I shall quote his description of the press from his "Botanist and Florist." "The drying-press, to be most efficient and convenient, should consist of a dozen quires of unsized paper, at least 11x14 inches folio; two sheets of wire-gauze (same size) as covers, stiffened by folded edges; and three or four leather straps, a yard in length, with buckles. When in use, suspend this press in the wind and sunshine; or, in rainy weather, by the fire."

In the article referred to, Prof. Wood speaks somewhat enthusiastically of the advantages attained: "It dries by evaporation rather than absorption and thus makes available all the sources of heat, whether natural or artificial. It requires comparatively but little paper—less than half the amount needed in the old process; hence it is portable, and serves the double purpose of portfolio and press. It requires no changing of specimens and papers, no drying of damp and mildewed sheets. After one or two days the specimens will be found thoroughly cured, and as bright in colors as is possible by any other known method. To the travelling collector this form of press is invaluable. With it so light is his labor in drying his specimens that it occasions him little, if any, delay, and so light his luggage that a single donkey will suffice in lieu of half a dozen for its transportation. With this simple press the writer, during a single year, cured more than three thousand specimens, in a protracted journey of about fifteen hundred miles."

During the present year, Mr. Roessler of New Haven, Ct., has perfected a handy press, which he calls the "Portable Wire Plant-press." It is similar in design, but in convenience and general effectiveness is perhaps an improvement on the one described by Prof. Wood, having an ingenious arrangement for fastening quickly and securely. Prof. Eaton, of Yale College, recommends it highly and says: "I have found that, by the use of a press of this kind, even kelps and rockweed [*marine Algae*] may be readily dried, especially if the press be placed in a current of heated air, as, for instance, over a common hot-air register." The reasonable price at which the press is offered —$1.75 each—will probably give it a large sale. The size of the press is 16⅝ by 11½ inches. It would be well for those botanists intending to use it to have two presses, one for a collecting portfolio, the other for a press.

As most of our space has been devoted to the wire-press, I shall defer consideration of the other method, with the writer's way of managing his green specimens, until another article.

§ 255. **Plants introduced with ballast and on made land.**

Since the publication by Aubrey H. Smith, Esq., in 1867, of his "Notes on some colonies of Plants," in the Proceedings of the Academy of Natural Sciences of Philadelphia, increased attention seems to have been given to the observation of plants introduced through the agencies of commerce. In 1877, Mr. Burk published in the same Journal a list of 125 foreign species collected by himself and Messrs. Parker and Martindale, during the ten years previous, from the docks and ballast deposits at Philadelphia, including those given by Mr. Martindale in the Botanical Gazette for November, 1876. In the latter publication, in August, 1877, Mr. Martindale mentions some 36 species collected during that year, including a few not previously observed; and in May, 1878, Mr. Mohr, of Mobile, gives a list of some 64 species collected by him about the ballast-grounds of Pensacola, during the ten years preceding, embracing about a dozen foreign species not in Mr. Burk's list. Although quite a number of plants that have been for several years more or less widely established in our N. Y. District are included in all the lists above referred to, there remain at least a hundred new immigrants, chiefly through ballast deposits, found during the last ten years, and not hitherto reported within our local boundaries.

From the vast commerce of New York it might be supposed that a proportionately large number of new plants would be found appearing in our neighborhood through similar agencies. But our crowded wharves and the rapid improvement of waste or filled-in lands have not usually permitted deposits of ballast to remain undisturbed long enough for the growth of plants. It is probable, nevertheless, that our local botanists have not been as alert as might be in seizing such opportunities for observation as have occasionally arisen.

Some ten years ago the Central Rail Road of New Jersey filled in about 300 acres of New York Bay, extending south-westerly from Jersey City to Communipaw. The new land thus made runs about three-quarters of a mile in length westwardly from the Company's Depot and Ferry Landing, by about a half mile in breadth. It was filled in to